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09/696,686	10/26/2000	Keith D. Allen	3866-4	4566

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EXAMINER
TON, THAIAN N

ART UNIT	PAPER NUMBER
1632	16

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/696,686	ALLEN, KEITH D.	
	Examiner	Art Unit	
	Thai-An N. Ton	1632	

-- The MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *66-104* is/are pending in the application.

4a) Of the above claim(s) *96-104* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *66-95* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 October 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 15 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Applicants' Amendment, filed 12/5/02, Paper No. 15, has been entered. Claims 1-65 have been cancelled. Claims 66-104 have been added.

Claims 66-95 are under current examination.

Election/Restrictions

Claims 96-104 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group(s), there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 12.

Claim 96 is drawn to an agent. Claims 97-100 are drawn to methods of determining whether expansion of a trinucleotide repeat in a gene encoding a TRP produces a phenotypic change in a cell. Claims 101-104 are drawn to methods of identifying agents capable of affecting a phenotype of a knockout cell line.

Applicants request the reconsideration and rejoinder of "at least claims 101-104". See p. 12, 1st ¶ of the Response. Applicants argue that the subject matter of claims 101-104 [Group V of the Restriction] have not acquired a separate status in the art as separate subject matter because they are both classified in the same class and subclasses, and that the search of the subject matter of the two groups would not be an undue burden upon the Examiner.

In response, it is noted that Group V of the Restriction is drawn to cell lines, which corresponds to claims 102-104 of the pending claims. The Examiner clearly states that the transgenic non-human vertebrate of Invention I is distinct from the cell lines from Invention IV; for example, the non-human vertebrate of Invention can be used as a disease model and the cell lines can be used to produce proteins *in vitro*. See p. 3, 2nd ¶ of the Restriction Requirement.

Applicants further request that Examiner's Group IV be examined with the elected subject matter of Group I. Group IV is directed to a method of identifying agents capable of affecting a phenotype of a knockout cell line, which corresponds to the pending claim 101. In response, it is reiterated that Groups I and IV are related as product and process of use, and the Examiner has clearly shown that the inventions are distinct by stating that, in Invention I, the cells can be used to produce protein *in vitro*. See p. 3, 1st ¶ of the Restriction requirement.

The requirement is still deemed proper and is therefore made FINAL.

Specification

The prior objection to the specification is withdrawn in view of Applicants' amendment to the specification.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Newly added claims 66-69, 71, 73, 74 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility, due to its not being supported by either specific and/or substantial utility or a well-established utility.

Applicants present Example 11 of the US Patent Office Guidelines. In particular, Applicants argue that the 102(b) rejection [Lia, cited in the prior Office action] anticipates now-cancelled claims 1, 2, 5, 6, 20, 22, 25-29, 46 and 55. Applicants point to Lia, which states that, "Recreating trinucloetide repeat instability in mice could thus prove a useful tool for studying mechanisms involved [in myotonic dystrophy]." In particular, Applicants argue that the cited art provides evidence that points to a property of the claimed animals such that another non-asserted specific and substantial credible utility would be established.

Applicants further argue that the specification provides a mouse having a phenotype characterized by cartilage disease, such that cartilage disease is reduced, and that the mice of the present invention have bone disease, such as may be characterized by abnormal bone and reduced bone formation, and/or chondrodysplasia. See p. 20 of the Response. Applicants point to a further asserted utility of the present invention, such as methods of treating bone disease and methods for ameliorating the symptoms of bone disease by administration of the T243 protein.

Applicants' arguments, with regard to the utility of transgenic mouse of the instant invention, are found persuasive. However, with regard to the cells of the instant invention, the cells lack utility because one of skill in the art would not know how to use these cells. There is no specific guidance with regard to the characterization of the gene, nor the peptide that it encodes. The knockout mice of the invention have utility because the specification teaches an assayable phenotype, whereas the specification only teaches general uses for the claimed cells cells. For example, the specification teaches methods for determining whether expansion of a trinucleotide repeat in a TRP produces a phenotypic change utilizing knockout stem cells [see p. 6, 3rd paragraph]. The specification further teaches that cells transfected with constructs encoding TRP gene can be used to produce TRP gene products [see pp. 30-31, 33-34]. However, these are non-specific uses that are applicable in general, and not particular to the cells that are claimed.

It is reiterated that the claimed transgenic cells are not supported by a substantial utility because the cells are final products resulting from processes involving, in specific embodiments particular, the T243 gene, which does not have an asserted or identified specific and substantial utility. The research contemplated by the specification to utilize the claimed transgenic cells in assays to determine phenotypic changes does not constitute a specific and substantial utility. Particularly, because the mechanisms that the T243 is involved in have not been specifically identified by the specification, the above-listed and asserted utilities

contemplated by the instant specification are neither substantial nor specific, due to being generic in nature. Note, because the claimed invention is not supported by a specific and substantial utility for the reasons set forth above, credibility has not been assessed.

Newly added claims 66-69, 71, 73, 74 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Newly added claims 66 and 80 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111 (Fed. Cir. 1991), clearly states that "applicant must convey with reasonable clarity to those skilled in the art that,

as of the filing date sought, he or she was in possession *of the invention.* The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" Vas-Cath Inc. v. Mahurkar, 19USPQ2d at 1117. The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed. Vas-Cath Inc. v. Mahurkar, 19USPQ2d at 1116.

While the specification provides adequate written description for cells comprising a disruption in a TRP gene, wherein the gene is T243, and mice comprising a heterozygous disruption in a TRP encoded by T243, the specification fails to describe any species within the genus of a naturally occurring allelic variation of T243 as encompassed by the claims, with particularity to indicate that Applicants had possession of the claimed invention.

Note that the claimed invention as a whole is not adequately described if the claims require essential or critical elements which are not adequately described in the specification and which are not conventional in the art **as of Applicants effective filing date.** Possession may be shown by actual reduction to practice, clear depiction of the invention in a detailed drawing, or by describing the invention with sufficient relevant identifying characteristics (as it relates to the claimed invention as a whole) such that a person skilled in the art would recognize that the inventor had possession of the claimed invention. Pfaff v. Wells Electronics, Inc., 48 USPQ2d 1641, 1646 (1998).

In the instant case, the claimed embodiment of a naturally occurring allelic variation of the T243 gene lacks a written description. The specification fails to describe what allelic variants of T243 would fall into this genus when constructed and used as claimed. For example, a naturally occurring allelic variation could encompass a gene different from T243 which comprises the target gene sequence of T243. Alternatively, a mutant T243 gene could be considered an allelic variation of the wild-type T243 gene, and as such, it would not be clear how one would distinguish between a mutant or wild-type T243, and if they would be considered allelic variants of each other. As such, the skilled artisan cannot envision *all* naturally occurring allelic variants of the T243 gene, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. See *Fiers v. Revel*, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016 (Fed. Cir. 1991). One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481, 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, as no naturally occurring allelic variations of the T243 gene were described, no naturally occurring allelic variations of the T243 gene meet the written description provision of 35 U.S.C. § 112.

Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

Claims 66-95 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for isolated cells comprising a disruption in a target DNA sequence encoding a TRP, mouse embryonic stem cells comprising a homozygous disruption in a target DNA sequence encoding a TRP, mouse embryonic stem cells comprising a disruption in the T243 gene, homozygous knockout mice whose genome comprises a homozygous disruption in the T243 gene, wherein said disruption inhibits the production of wild-type T243 and the mouse has the phenotype of reduced weight relative to a wild-type mouse which does not contain said disruption, decreased length relative to a wild-type mouse which does not contain said disruption, a decreased ratio of weight to length relative to a wild-type mouse which does not contain said disruption, abnormal cartilage and reduction of bone formation and dysplastic changes in the kidneys, and methods of using such mice, does not reasonably provide enablement for does not reasonably provide enablement for mice comprising a heterozygous disruption in the T243 gene, knockout mice comprising a homozygous disruption in a the T243 gene,

wherein the disruption inhibits the production of wild-type T243 for the breadth claimed. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Applicants review the Examiner's comments from the prior Office action with regard to the cited references with regard to the state of the art of transgenic animals. Applicants argue that the art cited by the Examiner does not report on the disclosed methods. Applicants point to Kappel and state that one of ordinary skill was routinely using transgenic animal technology to study targeted and regulated expression of genes and structural and functional ablation of genes. Further, Applicants analyze the prior cited art [Mullins (1993), Houdebine, Wall, Mullins (1995), Cameron, Nieman and Moreadith] and conclude that the cited art supports that the presently claimed invention does not require an undue amount of experimentation. See pp. 26-32 of the Response.

Applicants' arguments have been carefully considered, however, they are not found persuasive. In particular, the reliance upon the prior cited art is to support that although transgenic animals of a particular phenotype could be made, the state of the art supports that the expression of a transgene and the effect of the transgene upon the phenotype of the resulting transgenic animal is unpredictable. It is noted that the Examiner's citation of the prior art is with regard to now-cancelled claims directed the generation of knockout non-human vertebrates. See pp. 9-10, bridging

¶ of the prior Office action. The newly added claims are drawn to a mouse, and in particular, a knockout mouse [see claims 80-95].

Applicants argue that the presently claimed invention has been demonstrated to be enabled, and recitations of specific phenotypes in the claims should not be required. Applicants argue that a reduction in TRP produces the described phenotype. See p. 33, 2nd ¶ of the Response. Applicants' arguments are not found to be persuasive. While the state of the art of knockout technology is such that one of skill in the art would be able to produce a knockout mouse comprising a disruption in a TRP encoded by T243, the resulting phenotype would not be predictable. This is supported by Moreadith [cited in the prior Office action] and Sanford *et al.* [Meth in Mol. Bio, 158:217-225, 2001] who state that, "Once a knockout allele generated by gene targeting has been introduced into the germline of a mouse, the primary concern is to efficiently screen the animal for mutant phenotypes. This is not necessarily a trivial exercise given the high frequency of unexpected or lack of phenotypes." [See p. 217, 1st paragraph]. Sanford *et al.* discuss various factors which have been shown to affect the phenotype, such as the genetic backgrounds of mice, which have been shown to influence the phenotype in the resulting knockout mouse [see p. 218 and Table 1]. Other factors which affect phenotype in knockout mice include a variation in penetrance, expressivity and modifier genes which are dependent upon genetic background.

With regard to claim breadth, the standard under 112, 1st ¶ entails the determination of what the claims recite and what the claims mean as a whole. In addition, when analyzing the enabled scope of the claims, the teachings of the specification are to be taken into account, because the claims are to be given their broadest reasonable interpretation as is consistent with the specification. As such, in light of the specification, the claimed invention is properly interpreted with regard to the disclosed phenotype of the exemplified T243 (-/-) mice. Such an interpretation is consistent with the specification because, with regard to the enablement requirement, one of skill in the art must be provided with both how to *make* and *use* the claimed invention.

The claims, as broadly written, are directed to isolated cells and cells found *in vivo*. This is not enabling because the breadth of the claims encompasses cells found in an intact knockout animal. However, the art and the instant specification only disclose one type of cell [an ES cell] that could be used to produce the knockout animal of the type claimed. It is suggested that to overcome this rejection, the term "isolated" be used with regard to the cells. Furthermore, it is reiterated that the claims, as broadly written, encompass embryonic stem cells [see also pp. 13-15] of the prior Office action. However, Applicants' arguments and/or amendments to the claims fail to overcome the art-recognized unpredictabilities associated with availability of such cells.

Accordingly, in view of the quantity of experimentation necessary for the production of the cells and knockout mice for the breadth claims, the unpredictable and undeveloped state of the art of knockout technology with particular regard to the unpredictable nature of the resulting phenotype, the unpredictability in the ES cells, it would have required undue experimentation for one of skill in the art to make and/or use the claimed invention.

Claim 80 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claim is directed to a mouse comprising a heterozygous disruption in a TRP encoded by T243 or a naturally occurring allelic variation thereof.

The specification teaches that heterozygous T243 knockout mice were compared to normal and homozygous knockouts for obvious phenotypic differences. The specification does not teach any phenotypic differences between the (+/-) T243 knockout mice and the wild-type mice. Furthermore, the specification discusses various phenotypes associated with the (-/-) T243 knockout mice [see Example 12]; however, the specification is silent with guidance to the phenotype associated with the (+/-) T243 knockout mice. The enablement requirement requires that one of skill in the art must be provided with both how to *make* and *use* the claimed

invention. However, the specification provides no enabled use for the heterozygous T243 knockout mice, and as such, it would have required undue experimentation for one of skill in the art to make and use the claimed mice.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 66-75 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are directed to cells comprising a disruption in a target DNA sequence encoding a TRP. It is unclear if the claims are directed to an isolated cell, or an animal comprising that cell. It is suggested that if an isolated cell is being claimed, that the claim be amended to reflect the term isolated.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 70, 72, 75, 77-79, 81 and 84 are rejected under 35 U.S.C. 102(b) as being anticipated by Hodgson *et al.* [**Hum. Mol. Genet.** 1996, 5: 1875-1885] for reasons of record advanced on pages 16-18.

The claims are directed to cells comprising a disruptions in a target DNA sequence encoding a TRP [claims 70, 72], cells comprising a homozygous disruption in a target DNA sequence encoding a TRP [claims 75, 77-79], and mice comprising a homozygous disruption in a target DNA sequence encoding a TRP, wherein the disruption inhibits the production of the wild-type TRP [claims 81, 84].

Applicants argue that the newly submitted claims are patentable over the cited art, and that the rejection of the prior claims over Hodgson is now moot. In particular, Applicants argue that homozygous targeted disruption of the murine HD gene results in embryonic lethality, and that FVB/N mice expression the YAC transgene were mated to mice heterozygous for the murine HD gene disruption, and that the recitation of the homozygous disruption in the new claims is believed to define over the art. Applicants further argue that Hodgson is concerned with restoring expression of human huntingtin in mice with a YAC, whereas the presently claimed invention requires a disruption in a target DNA sequence encoding a TRP, which requires a reduction in the production of wild-type TRP. Applicants argue that Hodgson provides a restoration of protein production, and fails to teach the claimed invention. See p. 34, 1st ¶ of the Response.

Applicants' arguments have been considered, however, they are not found to be persuasive. It is maintained that Hodgson anticipates the claimed invention. The mice, as taught by Hodgson, meet the limitations of each claim. In particular, Hodgson teaches mice contain a targeted homozygous disruption in a target DNA sequence encoding a TRP, in particular, Hodgson *et al.* teach the breeding of yeast artificial chromosome [YAC] transgenic mice expressing human huntingtin with mice heterozygous for a targeted heterozygous for a targeted disruption in the murine huntingtin gene and that viable offspring homozygous for the disrupted murine Huntington's disease [HD] gene expressing human huntingtin derived from the YAC were generated [see *Abstract*]. Furthermore, with regard to the limitation of the claims which require the inhibition of the production of the wild-type TRP, Hodgson clearly states that the homozygous knockout mice do not express the murine huntingtin [see p. 1882, 1st column, 2nd ¶].

It is further noted that claims 70 and 72 are product-by-process claims, Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. See In re Ludtke, supra. Whether the rejection is based on "inherency" under 35 USC 102, on "prima facie obviousness" under 35 USC 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture

products or to obtain and compare prior art products. In re Best, Bolton, and Shaw, 195 USPQ 430, 433 (CCPA 1977) citing In re Brown, 59 CCPA 1036, 459 F.2d 531, 173 USPQ 685 (1972). Further, see MPEP §2113, "Even though product-by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." As such, the cells taught by Hodgson anticipate the claimed invention as they teach cells comprising a disruption in a target DNA encoding a TRP.

Accordingly, Hodgson anticipates the claimed invention.

Claims 70, 72, 75, 77-79 rejected under 35 U.S.C. 102(b) as being anticipated by Lia *et al.* [**Hum. Mol. Gen.**, August 1998, 7:1285-1291], for reasons of record advanced on pages 18-19 of the prior Office action.

The claims are directed to cells comprising a disruption in a target DNA sequence encoding a TRP. Note that claims 70 and 72 are product-by-process claims, see *supra*.

Applicants argue that the prior rejection of the claimed invention over Lia is moot. In particular, Applicants point out that Lia is not believed to teach

homozygous disruptions, that Lia does not require a reduction in the wild-type protein [see pp. 34-35 of the Response].

Applicants' arguments have been carefully considered, and are found partially persuasive with regard to Lia's lack of teachings or guidance for the production of homozygous knockout mice. However, it is maintained that Lia teaches the cells comprising a disruption in a TRP. Note that the claims read on both isolated cells *in vivo*. Lia *et al.* teach that a CTG repeat in the DM protein kinase gene is responsible for causing myotonic dystrophy [see *Abstract*]. Lia *et al.* describe the generation of transgenic mice containing one copy of the human genomic DNA fragment containing the 59 DMPK and DMAHP genes and 55 CTG [see p. 1286, 1st column, paragraphs 1-2]. Lia *et al.* teach the analysis of tissues from the transgenic mice using semi-quantitative RT-PCR [SP-PCR] [see p. 1286 and Table 1].

Accordingly, Lia *et al.* anticipate the claimed invention.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thái-An N. Ton whose telephone number is (703) 305-1019. The examiner can normally be reached on Monday through Friday from 8:00 to 5:00 (Eastern Standard Time), with alternating Fridays off. Should the examiner be unavailable, inquiries should be directed to Deborah Reynolds, Supervisory Primary Examiner of Art Unit 1632, at (703) 305-4051. Any administrative or procedural questions should be directed to William Phillips, Patent Analyst, at (703) 305-3482. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center number is (703) 872-9306.

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